

*Idiopholis Everetti*, sp. n.

Snout short and obtuse. Rostral narrow, deeper than broad; no azygous shield between the internasals; frontal once and a half as broad as long, as long as the præfrontals, less than half as long as the parietals; six upper labials, third and fourth entering the eye, fifth largest and forming a suture with the parietal; anterior chin-shields only slightly longer than the posterior. Scales in 15 rows. Ventrals 133; anal entire; subcaudals 25. Uniform dark bluish grey, ventral surface of head and neck slightly paler.

Total length 155 millim.

*Hab.* Sawa, N. Borneo (*A. Everett*). The only specimen is preserved in the British Museum (Natural History).

The species differs from *I. collaris* (Mocq.) by its broader frontal, by the absence of an azygous shield between the internasals, by its shorter tail, and by its coloration.

LXVI.—*Natural History Notes from the Royal Indian Marine Survey Ship 'Investigator,' Commander T. H. Heming, R.N., commanding.*—Series III., No. 5. *An Account of the Trawling Operations during the Surveying-season of 1900–1901.* By A. F. McARDLE, B.A., M.B., Capt. I.M.S., Surgeon-Naturalist to the Survey.

DURING the season fourteen deep-sea trawls were made in over 100 fath., of which eleven were in water over 500, and five in water over 1000 fath. deep. This may seem to be no very great number for some months' work, but it must be borne in mind that surveying is the principal work of the R.I.M.S. 'Investigator,' and this takes up so much of her time that trawling must necessarily be to her of secondary importance and relegated more or less to the background. Except, too, when she is on her way to the surveying-ground, or from one surveying-ground to another, she is working between the coast and the hundred-fathom line, rendering deep trawling impossible. A combination of circumstances is thus necessary before deep-sea trawling can be undertaken on the ship—she must be in deep water, have time to spare for the operation, and favoured with fine weather.

Of the collections made during the season the Fishes and the Crustacea (with the exception of the Paguridæ) were worked out during the recess; the Mollusca, Starfishes,

Holothurians, Corals, and Worms remain still to be described and will be subsequently reported on.

On the 10th of October, 1900, the 'Investigator' left Bombay for Calicut to pick up the surveying-party who had been spending the recess at Coonoor. As the 'Investigator' had to take her tender the 'Nancowry' in tow, no trawling could be attempted on the way. On the 13th we arrived at Calicut. From then on to Christmas the ships were busily engaged in their survey between Kundapur on the north, and Mangalore on the south, never going outside the hundred-fathom line. On the 12th of November two very fine specimens of the Indian fin-whale, *Balenoptera indica*, were seen at close quarters, one of them crossing right under our bows. On the 16th of November the trawl was used in shallow water, Sta. 271, in 22 fath.; but, as was to be expected at this depth, the specimens obtained were all well known.

On the 26th of December the 'Investigator' left Mangalore and ran out to sea until deep water was reached, and the next day was devoted to trawling. In the morning the trawl was lowered in 902 fath., Sta. 272. The trawl rapidly filled with mud, and little else was found in the net when it was hauled up. The ship altered her course and ran some distance to the N.E., and sounded in 870 fath. The trawl was then lowered, Sta. 273, and this time proved a little more successful, securing a fair number of starfishes, holothurians, worms, and crustaceans. Among the latter were *Munidopsis stylirostris*, *Hypsophrys superciliosa*, *Glyphocrangon unguiculata*, and *Acantheephyra sanguinea*. That strange fish, *Leptoderma affinis*, was also captured here. On Jan. 2nd the ship left Mangalore for Colombo, trawling *en route*. On the next three days we trawled at Stas. 274, 275, and 276, in 1150, 771, and 1006 fath. respectively. As a rule, the trawl was lowered at 6.30 A.M. and was on deck again before noon. Some very interesting specimens were obtained in these trawls, including *Bathyonus (Bazzozetus) glutinosus*, *Dermatorus trichiurus*, *Xenodermichthys Güntheri*, a species of *Cyclothone*, and *Odontostomus atratus* among the fishes. The latter was of exceptional interest, inasmuch as the little animal had swallowed another fish almost as large as itself, which plainly showed through its translucent, enormously distensible, gullet. Rare crustaceans were *Lithodes Agassizii*, *Benthescymus Bartletti*, and a new species of *Munidopsis*.

On the evening of the 6th we arrived at Colombo, and left again on the morning of the 9th for our next surveying-

ground south of Negapatam. On the 10th we trawled at Sta. 277 in 859-880 fath. Among the specimens obtained at this station were a new species of *Photichthys* and a *Munidopsis* (*Elasmonotus*) new to science. The next day we sounded and trawled in 1912 fath., Sta. 278. Among the specimens was one of *Sternoptyx diaphana*, which the 'Investigator' had previously dredged in the Arabian Sea off the Malabar coast. The 12th and 13th found the sea too rough to trawl; and we arrived at Negapatam on the evening of the 13th.

From this on to the middle of March surveying-work took up all the time of the ship and left none for trawling. Sometimes on Saturday afternoons, if the week's work had not been a particularly tiring one, we got the Lascars to volunteer to go out seining. Tow-nets were used every night, and the seine-nets of the local fishermen visited and inspected in the hope of finding new or rare species.

On the 18th of March the ship went out for a few days' trawling. Sta. 279, in 300 fath., off Porto Novo, proved very rich, among the fishes captured being *Lamprogrammus fragilis*, *Harpodon squamosus*, *Peristethium investigatoris*, and *Xenomystax trucidans*. There was a large haul of crustaceans, comprising *Munidopsis scobina* (34 specimens), *Munida andamanica*, *Lyreidus Channeri*, *Glyphocrangon investigatoris*, *Ægeon* (*Parapontocaris*) *bengalense*, *Heterocarpus gibbosus*, *Nematocarcinus cursor*, *Aristæus semidentatus*, *Calocaris Alcocki*, a new species of *Calastacus*, *Haliporus æqualis*, and *Pandalus Alcocki*. On March 19th, at Sta. 280, in 446 fath., another successful haul was made. As the net approached the surface numbers of fish shot up out of it and lay on the top of the water. A boat was lowered and about forty were picked up, as they lay with their eyes protruding and air-bladders distended, dead and dying. They were mostly *Macrurus*. Other fishes obtained in this trawl were *Neobythites conjugator*, *Bathyclupea Hoskyni*, *Synagrops philippinensis*, *Dysommopsis mucipara*, *Lamprogrammus fragilis*, and *Saurenhelys tæniola*. The crustaceans were there in great numbers too, including species of *Munida*, *Lyreidus*, *Ethusa*, *Heterocarpus*, *Pandalus*, *Hoplophorus*, *Aristæus*, *Haliporus*, *Hyastenus*, and *Polycheles*, which were fairly common, and *Munidopsis regia*, *Glyphocrangon hastacauda*, and *Psathyocaris infirma*.

Sta. 281, in 300 fath., where we trawled on March 20th, was very similar to Sta. 279, with the addition of *Aphoristia Wood-Masoni*, *Benthobatis Moresbyi*, and *Neobythites macrops* to the fishes, and *Munidopsis scobina*, *Pasiphæa unispinosa*,

and *Alpheus macroscelus* to the crustaceans. From March 20th to April 2nd the ship was surveying off Point Calimere. On April 2nd we left for Colombo, and on the 3rd we trawled at Sta. 282 in 498-726 fath. The trawl was lowered in 498 fath., and after it was hauled in a sounding showed 726 fath. This rapid deepening of the water perhaps accounts for the very poor results obtained at this Station, for the only interesting specimens obtained were *Nephropsis atlantica* and *N. ensirostris*.

The next day, April 4th, we lowered the trawl in 1086 fath., Sta. 283. The bottom was very foul, and the net came up considerably torn and practically empty. Among the specimens were *Galacantha rostrata* and *Sergestes bisulcatus*.

All the ground round and off the south and east coasts of Ceylon is very interesting and has often yielded valuable results; but the coral and rocky bottom makes trawling very risky work, the trawls are often damaged and sometimes lost in spite of the utmost care, and the nets seldom escape injury.

On April 5th we trawled at Sta. 284 in 506 fath. The trawl came up greatly damaged, the iron framework bent out of all shape and the net torn to pieces. But in the remains of the latter were secured a fine lot of coral and a big collection of starfishes. Among the Crustacea was a new species of *Uroptychus*. The corals included a species apparently identical with the red coral of commerce, *Corallum rubrum*, which has never before been found in these seas.

On April 6th the trawl was lowered for the last time in the season. We had sounded in 1600 fath., and the trawl with 2200 fath. of wire rope was paid out. Shortly after it was all out and the ship going slowly astern, the strain suddenly went up on the accumulator. Orders were immediately given to stop the ship, but before it could be done the rope parted at the near end, and the trawl with over 2000 fathoms of rope was lost. This unfortunate accident finished the trawling for the season, as we had no second rope on board. The 'Investigator' returned to Bombay, and went into dock on May 1st, 1901.

The following is a detailed description of a new species of fish and four new crustaceans. All will be figured in an early issue of the "Illustrations of the Zoology of the 'Investigator.'"

## TELEOSTEI.

## PHYSOSTOMI.

## Family Sternoptychidæ.

## PHOTICHTHYS, Hutton.

*Photichthys Hemingi*, sp. n.

B. 14. D. 10. A. 61. P. 11. V. 9.

Body black, covered with large deciduous scales. The length of the head is about one-seventh the length of the body without the caudal, and a little greater than the height of the body. The eyes are situated very near the anterior profile, about a diameter apart from one another, and are one-sixth the length of the head. There is a double row of small needle-like teeth in the upper jaw, and a single row of similar but smaller teeth in the mandible. A few small teeth in the palatines and vomer, but the latter has no fang. The surfaces of the mesopterygoids minutely denticulate. Gill-openings very wide. Four gills with short laminae and long setose gill-rakers on the first three arches. The dorsal fin is situated above the space between the ventral and anal fins. The latter is extremely long and terminates about an eye-length from the caudal. The pectoral and ventral fins are nearly in the same plane, and the latter are almost midway between the former and the beginning of the anal fin. On the two specimens, one of which is very much damaged and the other by no means perfect, no adipose dorsal fin can be made out. The back is scaly and is not rugose. The luminous organs, which show up a dull opaque white against the dark background, may be grouped as follows:—

- (1) One between the bases of all the branchiostegal rays.
- (2) Sixteen between the symphysis of the jaw and the pectoral fins.
- (3) Eight between the pectoral and the ventral fins.
- (4) Five between the ventral and the anal fins.
- (5) Thirty-five or thirty-six distributed along the bases of the anal rays. The last four groups may be taken as forming the lowest lateral row.
- (6) and (7) A second and a third lateral row join about the ventral fins, and run as a single row of spots to near the caudal fin.
- (8) A fourth row, not so distinct as the others, runs from behind the head to near the termination of the anal fin.



There are one or two glands on the head, one at the anterior angle of, and the other behind, the orbit.

Length 6-8 inches. Two specimens from the Bay of Bengal, 475 and 859-880 fath.

This fish bears several points of resemblance to *Gonostoma maderense* (Johnson, Proc. Zool. Soc. 1890, p. 458), notably in the absence of fangs on the vomer and of an adipose dorsal fin; but in other respects it appears like a true *Photichthys*. It differs from *G. maderense* in having scales on the back and none on the cheek, and in having but a single row of teeth in the anterior portion of the lower jaw. It is quite possible, too, that the small adipose fin may have got rubbed off in the 'Investigator' specimens.

Named after Commander T. H. Heming, R.N., in gratitude for the interest and trouble he has invariably taken in the 'Investigator's' zoological work, and the help he has given to the Surgeon-Naturalist.

## MACRURA.

### Family Thalassinidæ.

#### CALASTACUS, Faxon.

##### *Calastacus longispinis*, sp. n.

*Description of a female*:—Carapace much shorter than abdomen, glabrous, laterally compressed, with the cervical groove well marked and with rounded antero-lateral angles. The rostrum is acutely triangular and short, about one-fourth the length of the remainder of the carapace. A slight but well-marked median carina runs backwards for about two-thirds of the way to the cervical groove, and carries a single blunt spine near its beginning. The margins of the rostrum are spinous, having five teeth on either side in its free portion and two more on their continuation backwards as ridges over the carapace, where they extend as far as the level of the termination of the median carina, enclosing a horseshoe-shaped space. The gastric area supports three small spines on either side arranged in a longitudinal row, midway between the median carina and the continuation of the rostral margins.

Abdomen smooth and naked, the pleura of the first somite rudimentary and overlapped by those of the second, which, like those of the succeeding segments, are large and well developed. The telson is quadrangular and broadly rounded off, as long as the swimmerets, and with a couple of minute

spines along the outer border. The inner caudal swimmeret has a thickened midrib which is spinous and also has a spine at its external angle. The outer swimmeret has two strengthening ridges, a couple of spines along its outer border, and has the edge of the transverse suture serrated.

The eye-stalks are movable, more than half as long as the rostrum, and run horizontally forwards to carry the terminal rudimentary eyes.

The expanded first joint of the antennular peduncle has a small external spine. Flagella equal and moderately long. The basal joint of the antennary peduncle is unarmed; the second joint has a small fixed internal spine and an extremely long external spine (stylocerite), which reaches nearly to the end of the long penultimate joint of the peduncle. The scaphocerite which springs from the base of the second joint is also long and extends for a short distance over the third joint. The third is very long, slender, and unarmed, as is the much shorter fourth joint. Flagellum long.

In the specimen the chelipeds and the fifth pair of legs are unfortunately missing. The second pair is shorter and stouter than the succeeding pairs, and the anterior borders of the ischium, merus, and carpus spinous. The third and fourth pairs are long and slender, the latter pair bent over the back of the carapace; the propodites very long and the dactyli short and setose.

Colour in spirit yellowish white.

A single female specimen, dredged in the Arabian Sea at Sta. 279, in 300 fath.

This species most nearly approaches *C. felix*, but can be readily distinguished by the larger spines on the antennary peduncle, the longer eye-stalks, and the naked body.

## ANOMURA.

### Family Galatheidæ.

#### MUNIDOPSIS, Whiteaves.

#### *Munidopsis orcina*, sp. n.

Carapace rectangular, uniformly rugose, without spines, and with regions well defined. Longer than broad, it is broader in the middle than at either end, and somewhat broader anteriorly than posteriorly. The antero-lateral angles are rounded, and separated from the sides of the carapace by a distinct notch. Rostrum broad, triangular, simple, a little more than a third the length of the remainder

of the carapace, the distal half inclined downwards. It is uniformly curved, with tubercles smaller than those on the carapace. There are no spines on the abdominal terga; those of the second, third, and fourth somites are deeply grooved transversely, the fifth and sixth partly covered with long hair. The basal joint of the antennular peduncle is large and inflated, and both the external spines are large and distinct. The antennary peduncle is small with a short external spine, the flagellum a little longer than carapace and rostrum combined. The eye-stalks have almost disappeared and are fused at the base, and produced into a small spine above the lateral almost immovable eyes.

The external maxillipeds, small and slender, have the ventral borders of the merus obscurely serrated. The chelipeds are about as long as the body and carapace without the rostrum, and one and a half times as long as the second pair of legs. All the joints are coarsely granular, and the merus to the fingers covered with long hair. The ventral border of the ischium is produced and carries a spine, and the distal ends of the merus and carpus are spinose.

The second, third, and fourth legs tuberculate, with spines on the distal ends of their meropodites and on the anterior borders of carpus and propodites; they are more distinct on the second and third than on the fourth pair of legs.

No epipodites on either chelipeds or legs.

Colour in spirit ivory-white.

A single specimen, male, dredged at Sta. 274 in the Arabian Sea, from 1150 fath.

Distinguished from *Elasmonotus longimanus* (A. M.-E.), which it most nearly resembles, by the different shape of the rostrum, the length of the chelipeds, the spine on the orbital peduncle, the long flagellum, and the antennary peduncle reaching well in advance of the almost immovable eyes.

*Munidopsis (Elasmonotus) Sinclairi*, sp. n.

Carapace unarmed, quadrangular, a little longer than broad, and broader anteriorly than posteriorly. Lateral borders parallel, subcristiform, and ending anteriorly in rounded angles. Regions well marked, and the gastric area considerably elevated. Rostrum simple, acutely triangular, nearly half the length of the remainder of the carapace, and with its distal end inclined upwards. The second, third, and fourth abdominal terga are non-spinose, but deeply grooved and carinated transversely; the fifth and sixth smooth, the tergum of the fifth slightly elevated. The base of the antennular peduncle carries two large external spines, and



there are small spines on the distal ends of the second, third, and fourth joints of the antennary peduncle.

The eyes are non-pigmented, non-faceted, and are terminal on the freely movable eye-stalks.

External maxillipeds fairly stout, the inner edge of the ischium is entire, while the ventral border of the merus has two strong teeth. The chelipeds are as long as the carapace minus the rostrum, and nearly twice as long as the second pair of legs. The eggs are small, orange-coloured, and fairly numerous: in the specimen under description there are twenty-five.

A single specimen, an ovigerous female, dredged off the south coast of Ceylon, at Sta. 277, from 880 fath.

It very closely resembles *Elasmonotus cylindrophthalmus*, but it has not got the characteristic eyes of the latter, and the external maxillipeds are different.

Named after Lieut. C. I. Sinclair, Royal Indian Marine, who has been for many years on the R.I.M.S. 'Investigator,' and has shown a naturalist's keenness in the dredging portion of the ship's work.

#### Family Galatheidæ.

##### UROPTYCHUS, Henderson.

##### *Uroptychus nanophyes*, sp. n.

Carapace longer than broad, practically smooth, though with the lens minute spines can be made out on the dorsum, especially in the male. The lateral margins are armed with six large spines arranged regularly, three in front and three behind the cervical groove, the posterior three being the larger.

Rostrum horizontal, acutely triangular, half as long as the carapace, and with three or four very small teeth on each side; it extends well beyond the antennary peduncle.

The eyes are well pigmented, terminal, hardly broader than their stalks, and extend about half the length of the rostrum.

The acicle of the antennary peduncle is very long, extending almost as far as the tip of the rostrum in the female, and nearly as far as this in the male. The flagella of the antennules are very unequal, the outer being long and the inner very short.

The chelipeds are very long and strong, twice as long as the body, and over twice as long as the other legs. The ischium has a large spine at its distal end, and two smaller

ones behind on its ventral surface. The merus has three distinct rows of spines on its dorsal surface, of which the internal row is the largest. One ventral row. Distally a crown of spines. The carpus has two small rows of spines, of which the inner is the longer; the hand smooth and not dilated.

The second, third, and fourth pair of legs are short compared with the chelipeds, the second a little longer than the third, and the third than the fourth; the ischium has a single spine, the merus, carpus, and propodus spinous, and the dactyli regularly dentate.

*Measurements:*

	Female.	Male.
	mm.	mm.
Body .....	17	15
Carapace .....	6	6
Rostrum .....	3	3
Chelipeds .....	34	30
Second pair of legs .....	15	13

One male and one female, dredged off the north-east coast of Ceylon in Sta. 284, from 506 fath.

Of the species heretofore described it is most like *Dyptachus intermedius* (A. M.-E.), but it differs from it in having a spiny rostrum, and very unequal flagella on the antennules. The carapace also is more quadrangular in shape.

LXVII.—*On Mammals obtained by Mr. Alphonse Robert on the Rio Jordão, S.W. Minas Geraes.* By OLDFIELD THOMAS.

THE British Museum has recently received from that admirable collector, Mr. Alphonse Robert, a collection of mammals obtained by him on the Rio Jordão, in the district of Araguary, S.W. Minas Geraes, and it has proved to be of such interest as to deserve a general account. Mr. Robert had already sent collections from Piqueté, Cruzeiro, and other localities near the borders of Southern Minas and Eastern São Paulo, collections which proved of the utmost value in identifying species described by Wagner and other older authors, but which had not contained any novelties beyond the *Sciurus Ingrami* described in a previous number of this Journal\*.

The present collection, however, came from a less-known region and included quite a number of new forms. It was

\* Ann. & Mag. Nat. Hist. (7) vii. p. 368 (April 1901).